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10/648,540

08/26/2003

Jiawen Dong

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EXAMINER

HUSON, MONICA ANNE

ART UNIT

PAPER NUMBER

1732

MAIL DATE

DELIVERY MODE

08/10/2007

PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

|                              |                                      |                                    |  |
|------------------------------|--------------------------------------|------------------------------------|--|
| <b>Office Action Summary</b> | <b>Application No.</b><br>10/648,540 | <b>Applicant(s)</b><br>DONG ET AL. |  |
|                              | <b>Examiner</b><br>Monica A. Huson   | <b>Art Unit</b><br>1732            |  |

**-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --**

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 11 June 2007.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1,3-6,8,10-21,23,24 and 27-32 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1,3-6,8,10-21,23,24 and 27-32 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 26 August 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)                                | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                       | 5) <input type="checkbox"/> Notice of Informal Patent Application                       |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

### **DETAILED ACTION**

This office action is in response to the RCE filed 11 June 2007.

#### ***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1, 3-6, and 15-17 are rejected under 35 USC 103(a) as being unpatentable over Davis et al. (U.S. Patent Application Publication 2002/0048691), in view of Rosato's Injection Molding Handbook (3<sup>rd</sup> ed), in view of Toshihiko et al. (JP 10-306268), further in view of Bopp et al. (U.S. Patent 5,145,877). Regarding Claim 1, Davis shows that it is known to carry out a method of molding an article, comprising injection molding a polymeric mixture of polystyrene and polyphenylene ether (Para. 0094; polystyrene=polyalkenyl aromatic; polyphenylene ether=polyarylene ether), wherein an injection molded radial disk exhibits a radial tilt change of less than or equal to 0.35 (Para. 0031, 0057, 0058), wherein the disk exhibits a percent feature replication of greater than or equal to about 90% (Para. 0120). Davis does not show a particular clamp tonnage useful during his injection molding process. Rosato shows that it is known to carry out a molding process using a clamp tonnage of about 12 to about 35 tons to form the article (Page 77-78, Kurto/John Manufacturer). It would have been prima facie obvious to one of ordinary skill in the art at the time the invention was made to choose a clamp tonnage such as Rosato discloses during Davis' molding process as part of routine experimentation in order to fine tune a molding process. See MPEP 2144.05 (II)(B). Davis does not show specific conditions under which radial tilt is measured. Toshihiko et al., hereafter "Toshihiko," show that it is known to carry out a method wherein radial tilt is measured after 96 hours at 80C (Para. 0008). It would have been prima facie obvious to one of ordinary skill in the art at the time the invention was made to use Toshihiko's radial tilt measuring parameters during Davis' molding method in order to insure that the radial tilt measurements are consistent with those required by customer specifications. Davis does not discuss temperature requirements for his molding process. Bopp et al., hereafter "Bopp," show that it is known to carry out a method wherein injection molding of polyphenylene oxide (i.e.

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polyarylene ether) and polystyrene (i.e. polyalkenyl aromatic) is carried out, wherein the material melt temperature is 328C and the mold temperature is 135C (Column 8, lines 23-44). It would have been prima facie obvious to one of ordinary skill in the art at the time the invention was made to use Bopp's suggested temperatures during the molding process of Davis in order to carry out the molding process according to temperatures which are appropriate for the particular molding materials.

Regarding Claim 3, Davis shows the process as claimed as discussed above in the rejection of claim 1 above, including a method wherein an injection molded radial disk exhibits a radial tilt change of less than or equal to 0.3 (Para. 0031, 0057, 0058). Davis does not show specific conditions under which radial tilt is measured. Toshihiko show that it is known to carry out a method wherein radial tilt is measured after 96 hours at 80C (Para. 0008). It would have been prima facie obvious to one of ordinary skill in the art at the time the invention was made to use Toshihiko's radial tilt measuring parameters during Davis' molding method in order to insure that the radial tilt measurements are consistent with those required by customer specifications.

Regarding Claim 4, Davis shows the process as claimed as discussed in the rejection of Claim 1 above, including a method wherein the melt temperature is 328C, i.e. about 340 (Column 8, lines 32-33), meeting applicant's claim.

Regarding Claim 5, Davis shows the process as claimed as discussed in the rejection of Claim 1 above, including a method wherein the mold temperature is 135C, i.e. about 120°C (Column 8, lines 40-44), meeting applicant's claim.

Regarding Claim 6, Davis shows the process as claimed as discussed in the rejection of Claim 1 above, but he does not show a particular claim tonnage. Rosato shows a method wherein the clamp tonnage is of about 15 to about 30 tons (Page 77-78). It would have been prima facie obvious to one of ordinary skill in the art at the time the invention was made to use Rosato's clamp tonnage during Davis' molding method as part of routine experimentation in order to fine tune a molding process. See MPEP 2144.05 (II)(B).

Regarding Claim 8, Davis shows the process as claimed as discussed in the rejection of Claim 1 above, including a method wherein the disk exhibits a percent feature replication of greater than or equal to 95 percent (Para. 0120), meeting applicant's claim.

Regarding Claim 15, Davis shows the process as claimed as discussed above in the rejection of claim 1 above, including a method of making a data storage disk (Para. 0002), meeting applicant's claim.

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Regarding Claim 16, Davis shows the process as claimed as discussed above in the rejection of claim 1 above, including a method of making a laminated data storage assembly (Para. 0002), meeting applicant's claim.

Regarding Claim 17, Davis shows that it is known to carry out a method of molding an article, comprising injection molding a polymeric mixture of polystyrene and polyphenylene ether (Para. 0094; polystyrene=polyalkenyl aromatic; polyphenylene ether=polyarylene ether), wherein an injection molded radial disk exhibits a radial tilt change of less than or equal to 0.35 (Para. 0031, 0057, 0058), wherein the disk exhibits a percent feature replication of greater than or equal to about 90% (Para. 0120). Davis does not show a particular clamp tonnage useful during his injection molding process. Rosato shows that it is known to carry out a molding process using a clamp tonnage of about 12 to about 35 tons to form the article (Page 77-78, Kurto/John Manufacturer). It would have been prima facie obvious to one of ordinary skill in the art at the time the invention was made to choose a clamp tonnage such as Rosato discloses during Davis' molding process as part of routine experimentation in order to fine tune a molding process. See MPEP 2144.05 (II)(B). Davis does not show specific conditions under which radial tilt is measured. Toshihiko et al., hereafter "Toshihiko," show that it is known to carry out a method wherein radial tilt is measured after 96 hours at 80C (Para. 0008). It would have been prima facie obvious to one of ordinary skill in the art at the time the invention was made to use Toshihiko's radial tilt measuring parameters during Davis' molding method in order to insure that the radial tilt measurements are consistent with those required by customer specifications. Davis does not discuss temperature requirements for his molding process or a specific polyphenylene oxide. Bopp et al., hereafter "Bopp," show that it is known to carry out a method wherein injection molding of poly(2,6-dimethyl-1,4-phenylene oxide (Column 3, lines 46-49) and polystyrene is carried out, wherein the material melt temperature is 328C and the mold temperature is 135C (Column 8, lines 23-44). It would have been prima facie obvious to one of ordinary skill in the art at the time the invention was made to use Bopp's suggested temperatures during the molding process of Davis in order to carry out the molding process according to temperatures which are appropriate for the particular molding materials.

Claims 18-20, 23-24, and 31-32 are rejected under 35 U.S.C. 103(a) as being unpatentable over Davis, Rosato, Toshihiko, and Bopp, further in view of Ohkawa et al. (U.S. Patent 5,525,645).

Regarding Claim 18, Davis shows that it is known to carry out a method of molding an article comprising injection molding a polymeric material to form articles according to a

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molding model comprising molding parameters and molding parameter values (Para. 0094, 0113), including injection molding a polymeric mixture of polystyrene and polyphenylene ether (Para. 0094; polystyrene=polyalkenyl aromatic; polyphenylene ether=polyarylene ether), wherein an injection molded radial disk exhibits a radial tilt change of less than or equal to 0.35 (Para. 0031, 0057, 0058), and wherein the disk exhibits a percent feature replication of greater than or equal to about 90% (Para. 0120). Davis does not give specific testing processes. Toshihiko shows that it is known to carry out a method including testing disk assemblies fabricated from the disks for radial tilt change, creating an updated molding model based on the molding parameter values that resulted in disk assemblies fabricated from the disks having a radial tilt change within a selected range of values; and repeating the molding, testing, and creating steps to form final disks and a final molding model (Para 0008; It is noted that Toshihiko's "repeated research" would comprise the claimed steps.). It would have been prima facie obvious to one of ordinary skill in the art at the time the invention was made to use Toshihiko's radial tilt change testing during Davis' molding process in order to accurately form an article that must meet strict end-use specifications. Davis does not show testing the articles for percent feature replication. Ohkawa et al., hereafter "Ohkawa," show that it is known to carry out a method comprising testing the disks for percent feature replication; creating an updated molding model based on the mold parameter values that resulted in disks exhibiting a percent feature replication within a selected range of values; and repeating the molding, testing, and creating steps until the final disks exhibit a percent feature replication of greater than or equal to about 90 percent (Column 12, lines 66-67; Column 13, lines 1-11, 45-67; Column 14, lines 1-2). Ohkawa and Davis are combinable because they are concerned with a similar technical field, namely, methods of molding polymeric articles. It would have been prima facie obvious to one of ordinary skill in the art at the time the invention was made to follow Ohkawa's testing procedures with Davis' molding process in order to insure the quality of the molded articles.

Regarding Claim 19, Davis shows the process as claimed as discussed above in the rejection of claim 18 above, but he does not show specific conditions under which radial tilt is measured. Toshihiko shows that it is known to carry out a method wherein radial tilt is measured after 96 hours at 80C (Para. 0008). It would have been prima facie obvious to one of ordinary skill in the art at the time the invention was made to use Toshihiko's radial tilt measuring parameters during Davis' molding method in order to insure that the radial tilt measurements are consistent with those required by customer specifications.

Regarding Claim 20, Davis shows the process as claimed as discussed above in the rejection of claim 18 above, including a method wherein an injection molded radial disk

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exhibits a radial tilt change of less than or equal to 0.35 (Para. 0031, 0057, 0058). Davis does not show specific conditions under which radial tilt is measured. Toshihiko show that it is known to carry out a method wherein radial tilt is measured after 96 hours at 80C (Para. 0008). It would have been prima facie obvious to one of ordinary skill in the art at the time the invention was made to use Toshihiko's radial tilt measuring parameters during Davis' molding method in order to insure that the radial tilt measurements are consistent with those required by customer specifications.

Regarding Claim 21, Davis shows the process as claimed as discussed above in the rejection of claim 18 above, including a method wherein an injection molded radial disk exhibits a radial tilt change of less than or equal to 0.35 (Para. 0031, 0057, 0058). Davis does not show specific conditions under which radial tilt is measured. Toshihiko show that it is known to carry out a method wherein radial tilt is measured after 96 hours at 80C (Para. 0008). It would have been prima facie obvious to one of ordinary skill in the art at the time the invention was made to use Toshihiko's radial tilt measuring parameters during Davis' molding method in order to insure that the radial tilt measurements are consistent with those required by customer specifications.

Regarding Claim 23, Davis shows the process as claimed as discussed in the rejection of Claim 18 above, including a method wherein the final disks exhibit a percent feature replication of greater than or equal to 95% (Para. 0120), meeting applicant's claim.

Regarding Claim 24, Davis shows the process as claimed as discussed in the rejection of Claim 18 above, including a method wherein the molding parameters are mold temperature (Para. 0113), meeting applicant's claim.

Regarding Claim 31, Davis shows the process as claimed as discussed above in the rejection of claim 18 above, including a method of making a data storage disk (Para. 0002), meeting applicant's claim.

Regarding Claim 32, Davis shows the process as claimed as discussed above in the rejection of claim 18 above, including a method of making a laminated data storage assembly (Para. 0002), meeting applicant's claim.

Claims 10 and 14 is rejected under 35 U.S.C. 103(a) as being unpatentable over Davis, Rosato, Bopp, and Toshihiko, in view of Adedji et al. (US PGPub 2002/0137840).

Regarding Claim 10, Davis shows the process as claimed as discussed in the rejection of Claim 1 above, but he does not show using a specific polymeric structure. Adedji shows that it is known to carry out a method wherein the polyarylene ether comprises the claimed structure (see claim listing) (Paragraphs 0015-0016). It would have been prima facie obvious to

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one of ordinary skill in the art at the time the invention was made to use Adedji's specific polymeric structure in Davis' molding process in order to obtain an article that meets exclusive end-use specifications characteristic of the certain polymer.

Regarding Claim 14, Davis shows the process as claimed as discussed in the rejection of Claim 1 above, but he does not show a specific molding composition. Adedeji shows that it is known to carry out a method wherein the polyarylene ether is present in the polymeric material in an amount of about 40 percent by weight and the polyalkenyl aromatic is present in the polymeric material in amount of about 60 percent by weight based on the total weight of the polyarylene ether and the polyalkenyl aromatic (Para 0014). It would have been prima facie obvious to one of ordinary skill in the art at the time the invention was made to use Adedeji's specific polymer in Davis' molding process in order to obtain an article that meets exclusive end-use specifications characteristic of the certain polymer.

Claim 11 is rejected under 35 U.S.C. 103(a) as being unpatentable over Davis, Rosato, Bopp, Toshihiko, further in view of Fortuyn et al. (U.S. Patent 6,306,953). Davis shows the process as claimed as discussed in the rejection of Claim 1 above, but he does not show using a polymer with a specific viscosity. Fortuyn et al., hereafter "Fortuyn," show that it is known to carry out a method wherein the polyarylene ether has an intrinsic viscosity of about 0.10 to about 0.60 deciliters per gram as measured in chloroform at 25°C (Column 2, lines 41-43). Fortuyn and Davis are combinable because they are concerned with a similar technical field, namely, methods of molding polymeric articles. It would have been prima facie obvious to one of ordinary skill in the art at the time the invention was made to use a material with Fortuyn's viscosity in Davis' molding process in order to obtain an article that meets exclusive end-use specifications characteristic of the certain polymer.

Claim 12 is rejected under 35 U.S.C. 103(a) as being unpatentable over Davis, Rosato, Bopp, Toshihiko, further in view of Allen (U.S. Patent 4,727,093). Davis shows the process as claimed as discussed in the rejection of Claim 1 above, but he does not show a specific polyalkenyl aromatic. Allen shows that it is known to carry out a process wherein the polyalkenyl aromatic contains at least 25% by weight of the claimed structural units (see claim listing) (Column 4, lines 3-23). It would have been prima facie obvious to one of ordinary skill in the art at the time the invention was made to use Allen's specific polymeric structure in Davis' molding process in order to obtain an article that meets exclusive end-use specifications characteristic of the certain polymer.



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Claim 13 is rejected under 35 U.S.C. 103(a) as being unpatentable over Davis, Rosato, Bopp, Toshihiko, further in view of Cheung et al. (U.S. Patent 5,872,201). Davis shows the process as claimed as discussed in the rejection of Claim 1 above, but he does not show a specific polyalkenyl aromatic. Cheung et al., hereafter "Cheung," show that it is known to carry out a method wherein the polyalkenyl aromatic is atactic crystal polystyrene (Column 7, lines 37-38). Cheung and Davis are combinable because they are concerned with a similar technical field, namely, methods of molding polymeric articles. It would have been prima facie obvious to one of ordinary skill in the art at the time the invention was made to use Cheung's specific polymer in Davis' molding process in order to obtain an article that meets exclusive end-use specifications characteristic of the certain polymer.

Claim 27 is rejected under 35 U.S.C. 103(a) as being unpatentable over Davis, Rosato, Bopp, Toshihiko, and Ohkawa, further in view of Singh. Davis shows the process as claimed as discussed in the rejection of Claim 18 above, but he does not show using a specific polymeric structure. Singh shows that it is known to carry out a method wherein the polyarylene ether comprises the claimed structure (see claim listing) (Column 3, lines 5-27). It would have been prima facie obvious to one of ordinary skill in the art at the time the invention was made to use Singh's specific polymeric structure in Davis' molding process in order to obtain an article that meets exclusive end-use specifications characteristic of the certain polymer.

Claim 28 is rejected under 35 U.S.C. 103(a) as being unpatentable over Davis, Rosato, Bopp, Toshihiko, and Ohkawa, further in view of Fortuyn. Davis shows the process as claimed as discussed in the rejection of Claim 18 above, but he does not show using a polymer with a specific viscosity. Fortuyn shows that it is known to carry out a method wherein the polyarylene ether has an intrinsic viscosity of about 0.10 to about 0.60 deciliters per gram as measured in chloroform at 25°C (Column 2, lines 41-43). It would have been prima facie obvious to one of ordinary skill in the art at the time the invention was made to use a material with Fortuyn's viscosity in Davis' molding process in order to obtain an article that meets exclusive end-use specifications characteristic of the certain polymer.

Claim 29 is rejected under 35 U.S.C. 103(a) as being unpatentable over Davis, Rosato, Bopp, Toshihiko, and Ohkawa, further in view of Allen. Davis shows the process as claimed as discussed in the rejection of Claim 18 above, but he does not show a specific polyalkenyl aromatic. Allen shows that it is known to carry out a process wherein the polyalkenyl aromatic

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contains at least 25% by weight of the claimed structural units (see claim listing) (Column 4, lines 3-23). It would have been prima facie obvious to one of ordinary skill in the art at the time the invention was made to use Allen's specific polymeric structure in Davis' molding process in order to obtain an article that meets exclusive end-use specifications characteristic of the certain polymer.

Claim 30 is rejected under 35 U.S.C. 103(a) as being unpatentable over Davis, Rosato, Bopp, Toshihiko, and Ohkawa, further in view of Adedeji. Davis shows the process as claimed as discussed in the rejection of Claim 18 above, but he does not show a specific molding composition. Adedeji shows that it is known to carry out a method wherein the polyarylene ether is present in the polymeric material in an amount of about 40 percent by weight and the polyalkenyl aromatic is present in the polymeric material in amount of about 60 percent by weight based on the total weight of the polyarylene ether and the polyalkenyl aromatic (Para 0014). It would have been prima facie obvious to one of ordinary skill in the art at the time the invention was made to use Adedeji's specific polymer in Davis' molding process in order to obtain an article that meets exclusive end-use specifications characteristic of the certain polymer.

### ***Response to Arguments***

Applicant's arguments with respect to the pending claims have been considered but are moot in view of the new ground(s) of rejection.

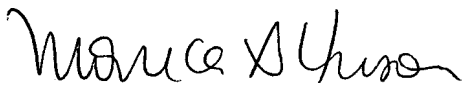
### ***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Monica A. Huson whose telephone number is 571-272-1198. The examiner can normally be reached on Monday-Friday 7:00am-4:00pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Christina Johnson can be reached on 571-272-1176. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

A handwritten signature in black ink, appearing to read "Monica A. Huson". The signature is fluid and cursive, with the first name "Monica" being more prominent than the last name "Huson".

Monica A Huson

August 6, 2007